proportionally the heaviest part of him) are near to S, and his centre of gravity is therefore comparatively near to the pivot about which the combination is going to revolve. Hence while *b* sinks, R rises, and as he performs his flight through the air over the head of S the silken strings gradually bring his feet forward until at last he has turned them forward so much that he has the greater leverage over the counterbalancing mercury at *b* and descends ready to take his stand on the third step. In this way the two manikins vault over one another's heads until they have descended from top to bottom of their tiny flight of stairs.

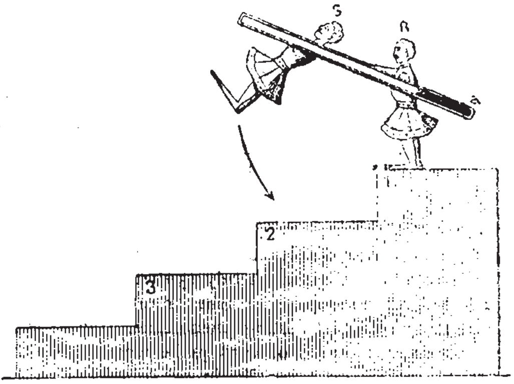

FIG. 6.

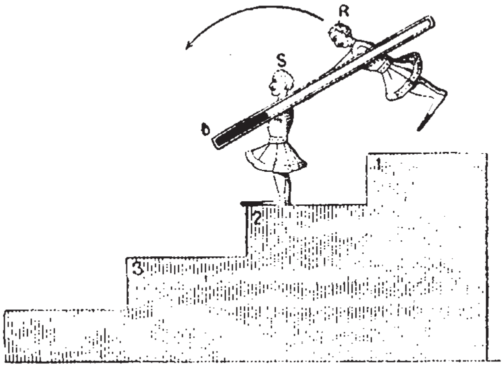

FIG. 7.

(*To be continued.*)

NOTES

THE French deep-sea exploring expedition off the North Coast of Spain in the Bay of Biscay, last month, appears to have been very successful, and to have fully confirmed the great reputation formerly earned by our neighbours in similar undertakings throughout the wide ocean. No less than 103 soundings were taken. The fauna agrees with that which was observed in the *Porcupine* cruise of 1870 along the western coasts of Spain and Portugal; and there are corresponding inequalities in depth. We understand that, with the approval of the French Commission, Dr. Gwyn Jeffreys will give an account of this expedition at the Swansea meeting of the British Association. The Paris report in the *Times* of August 5 is not quite correct.

THE American Association for the Advancement of Science meets this year at Boston, on the same day as our own does at Swansea, August 25. From the Local Committee's circular, which has been sent us, it is evident that a "good time" is in store for those who attend the meeting, and they are likely to be many. It seems to us that the organisation of the American Association is much better than ours, though it will be seen from last week's NATURE that the Swansea Committee have taken great pains to give the British Association an agreeable reception. The Boston Local Committee contains many well-known names, and is subdivided into a Committee-at-Large, Reception Committee (which includes the names of numerous ladies, headed by Mrs. Louis Agassiz), Committees on Finance, Railroads, Hotels and Lodgings, Rooms for Meetings, Mails, Express, and Telegraph, and Excursions. On these committees we find such names as Ralph Waldo Emerson, Asa Gray, Oliver Wendell Holmes, Henry W. Longfellow, A. Graham Bell, A. Agassiz, and many others eminent both in science and literature. The arrangements for excursions and receptions seem admirable, and the *savants* will have a terrible round of pleasure to undergo. Among other provisions by the Local Committee is a daily free public luncheon between the morning and afternoon sectional meetings, for the purpose of keeping the members together. The circular contains all information about hotels and lodgings, receptions, excursions, meetings, &c., and ample provision has been made in the various rooms for experiments and illustrations. The rooms will be connected by telephone with each other, with the hotels, and with the general telephone circuit of Boston and Cambridge. Indicators in each of the sectional rooms, as well as in the secretary's room and in the hotel selected for head quarters, will show at any moment what papers are under discussion in each of the sections. Among the public addresses to be given during the meeting are those of the retiring president, Prof. G. F. Barker, the vice-president of Section A, Prof. Asaph Hall, and the vice-president of Section B, Mr. Alexander Agassiz.

THE Annual Meeting of the British Medical Association was opened at Cambridge on Tuesday, under the presidency of Prof. Humphry.

THE Institution of Mechanical Engineers had a very successful meeting last week at Barrow-in-Furness. Every facility was afforded the members for inspecting the many objects of engineering interest in Barrow and its vicinity. The papers read were all of more or less technical interest.

ON Thursday last the Anthropological Congress was opened at Berlin in the presence of the Crown Prince and Princess of Germany and of many distinguished literary and scientific men. Prof. Virchow delivered an eloquent speech. Dr. Schliemann afterwards gave an account of his discoveries and excavations. On Monday a banquet was given in honour of Dr. Schliemann and Prof. Nordenskjöld, who, on Tuesday, were entertained by the Crown Prince.

IN connection with the vote for the British Museum on Monday there was some talk as to the organisation of that institution and of the new Natural History Museum. Mr. Walpole spoke hopefully of the early transference of all the collections destined for the South Kensington buildings, while Mr. Story-Maskelyne, tenderly remembering his former colleagues, advocated the erection of houses for the officials. There was a good deal of vague and unsatisfactory talk about the distribution of duplicates to provincial museums. This is evidently a matter that requires clearing up, and it might be well to take means to decide once for all what are duplicates and what would be the best method of disposing of them. Mr. M'Cullagh Torrens thought there was great room for reform in the method of appointing the Trustees of the British Museum, who are far from being representative; there should, he thinks, be a larger infusion of the scientific element among them.

A CORRESPONDENT sends us some notes as the result of a visit to the Belgian National Exhibition at Brussels. The total extent of the ground is 300,000 square metres, and the area covered by the palace 70,000. The number of exhibitors is 7,000, or more than one for each 1,000 inhabitants in a population of about 6,000,000. Two of the pavilions are occupied by the two principal telephonic companies, who are competing at Brussels, Antwerp, and Verviers, where rival central offices have been built, and are besieged by a crowd of experimenters. The number of tickets sold at the gate is about 10,000 a day, which is considered a success. It was attempted to establish a captive balloon on the model of the large Giffard captive balloon on a reduced scale, the rope being only 300 metres long instead of 500, and the volume 8,400 cubic metres instead of 25,000. But in spite of this diminution the balloon refused to go up, the hydrogen having been mixed with a large quantity of common air. The Belgian balloon has been disinflated, and fresh efforts will be made to fill it with better gas, but success is considered rather doubtful. Except this disappointment, which it shares with Berlin, Vienna, and New York, where attempts to start a captive balloon failed, everything is going on remarkably well at Brussels. It is difficult to give a brief description of all the objects worthy of notice in this wonderful display of Belgian enterprise and skill. In the engine hall a facsimile of the first locomotive constructed on the continent has been placed. It bears the date of 1835, and an inscription shows it was made by Cockerill for the Belgian Government Railway. One of the wonders of the Exhibition is the collection of models of mining, showing all the incidents of underground workings and living. Scientific societies and Government exhibit complete collections of the mineral and vegetable kingdoms within the limits of Belgian territory. Every provincial Government is an exhibitor, and also the various Central Government Departments. The Belgian Photographic Society has organised a very good display. The Brussels Observatory has sent a model of van Rysselberghe's self-registering meteorograph. This apparatus is in operation at the Brussels Observatory, in Antwerp, at Ostend, and at Arlon. When the Belgian Observatory is moved to a new situation at some distance from the city, all these instruments will be connected with it by a special telegraph wire, so that the physicists of the Meterological Office will write their predictions in a room where they will be able to watch the development of meteorological phenomena all over their native country. An electrical railway has been established in the gardens, and is working all day long with perfect regularity. The number of waggons is three, each of them carrying six passengers, with a velocity of 3 metres per second, to a distance of 300 metres, for 3*d*. The locomotive, of which the weight is 800 kilogs., carries a Gramme machine, worked by another machine, which is stationary. There is also in another part of the city a so-called International Exhibition, but this, although opened in state by the King, is merely a private speculation, without having any special feature or deserving any particular notice.

SIR WILLIAM HARCOURT stated in the House of Commons the other day that it is hoped that the work of the Cambridge University Commissioners will be completed before the Christmas Vacation.

PROF. MENDELEEF is at present in the Caucasus. He intends to visit Vladikavkaz, Tiflis, Batoum, and Poti, whence he proposes to proceed to Kertch to inspect the sources of petroleum.

THE ladies continue to keep well to the front in the University of London Examinations. In the first division of the first B.Sc. examination the fourth on the list is Miss Sophia Bryant. The other five ladies are well up in this division, there being none so low as the second. In the first division of the first B.A. Examination the second on the list is Miss Catherine Eyre Anelay.

GREAT activity prevails at the Meudon aëronautical school, where the French Government has established extensive works for the construction of a large number of war balloons. Each of these, 10 metres in diameter, will be made of silk, varnished by a process invented in 1794. The valve is to be made of metal, and the shape will be quite spherical. Not less than forty of them will be sent to the several French armies for the purpose of making captive or free ascents when required. Of these more than half have been already constructed. The construction of furnaces for the preparation of pure hydrogen has not begun yet. The warehouse is large enough to contain inflated balloons, which can find exit by the roof. All the men and officers (except one) belong to the corps of Military Engineers. All the works for building directing balloons have been stopped.

THE *Daily News* Naples correspondent writes that Prof. Silvestri wrote from Catania on July 15 that since his report on May 1 last about the eruption of ashes from Mount Etna he has observed many other interesting phenomena. On May 16 and 17 last some slight shocks of earthquake were felt on the east side of Mount Etna, especially in the district of Acireale. About a month later the shocks commenced again and were repeated on several consecutive days—that is on June 15, 16, 17, and 18. The motion was undulating. About two days before these manifestations a new and very active phase of mud eruptions set in at Paterno, on the south-east of Etna. Two craters opened, which violently ejected gaseous matter with abundant torrents of mud, more consistent than usual, and of a higher temperature (140 degrees Fahrenheit), which, accumulating in the basins in large masses, finally broke through all barriers, overflowed and destroyed the adjoining fields, and buried several mills and farmhouses. In this eruption Prof. Silvestri noticed an abundant development and pressure of gaseous matter, of such force that it produced oscillations strong enough to tear up the old lava, forming rents out of which the gas rushed with the noise of a boiler letting off its steam. Coincident with these phenomena clouds of vapour issued from the eruptive fissure of last year, confirming the opinion formed by the Professor before—namely, that this fissure, lying between the two principal craters of 1879 and the great central one, had not been blocked with lava, but was still in communication with the central eruptive axis, for vapour, mixed with ashes which fell all over the cone, also issued from the central crater. This activity continued during several days, and still continues with decreased intensity, seen from Catania in the shape of dense clouds covering the whole summit of Etna in a clear sky. Changes have taken place which have entirely altered the form of the central crater. The old ravine, which formerly crossed the crater and made two-thirds of it into an ample and easily accessible basin, a natural laboratory for the study of the products of the volcano, now exists no longer. The central crater, from the effects of violent commotions, has crumbled, and, with part of its sides and the high point whence it was formerly possible to enjoy the sunrise, has been precipitated into the ravine, diminishing the height of the mountain by about 40 feet, while the circumference of the crater has become wider by half a kilometre. The general destruction of the old sides has in a certain way rejuvenised the crater, which has regained its characteristic form of a funnel, at the bottom of which is now the eruptive mouth.

A LETTER from San José de Guatemala, dated July 2, to the *Panama Star and Herald*, says:—"At 3 a.m. on June 29 the volcano Fuego suddenly became active, throwing out vast showers of fire and cinders, with great darts of flame shooting up from 350 feet to 500 feet above the mouth of the crater. The whole country to the east and south was magnificently illuminated. At 3.40 a.m. two streams of lava could be seen running down the sides of the volcano, one to the south and east, the other to the westward. Dense masses of steam and smoke rose from the courses of the lava streams, as the shrubbery and foliage were burnt. The river Guacalate rose suddenly, and its waters were quite warm. Fuego continued to belch fire until daylight, by which time the whole northern horizon, looking from San José, was dark with the smoke from the volcano. The lava streams continued in view until 4.30 a.m. The first grand column of fire rose at least 500 feet in height, solid and smooth, and then the top, expanding, opened out like an umbrella, the sparks coruscating like those from a brilliant rocket. The pulsations of flame during the first two hours of the eruption were about 50 seconds apart, strong and regular. The eruption was less active until, at 7.30 p.m. on July 1, a column of flame rose to a height, probably, of 150 feet or more. At the hour of writing Fuego smokes away steadily."

A REMARKABLE thunderstorm is reported as having occurred on July 24 last at Moylough, county Galway, Ireland. The storm, which was very vivid and accompanied by a most destructive fall of enormous hailstones, lasted about an hour and a half. One of the strongest discharges took place in a field about a mile from Moylough Church. The spot is described as presenting on a large scale an appearance like that of a sheet of cardboard that has been pierced by the discharge of a battery of Leyden jars. A long branching furrow, upturned as if by a plough, was found, a deep hole being bored at each end of six terminal branches, the earth round the holes being raised as if pushed up from below. Tufts of grass were scattered thirty and forty yards from the place.

MR. W. BRANKSTON RICHARDSON, writing from 61, Sutherland Gardens, Maida Vale, sends the following dog-story to the *Times*:—"Concurrently with the forty days' fast of the misguided American doctor, another fast has been in progress in our own country, for the truth of which I myself can vouch. A friend of mine who lives in Devonshire left home some weeks since on a series of visits to his friends in distant parts of the country. A few days after he left his servants wrote him that a favourite Skye terrier was missing. My friend, after every search had proved fruitless, considered that the dog had been stolen. On his return home, after an absence of one month and five days, he unlocked the library, the doors and windows of which had been bolted and barred during his absence, and to his astonishment the missing dog crept out into the light, a living skeleton and totally blind. He was well cared for, and has now quite recovered his health and sight. But his existence was wonderful. He had had no food and no water, and had not gnawed the books or obtained sustenance from any source whatever."

IT is at present too early to offer an opinion as to whether "Brook's Popular Botany: comprising all the Plants, British and Foreign, most useful to Man in Medicine, Food, Manufactures, and the Garden," is likely to answer to its title, since so much depends on its completeness. In the two numbers which we have at present received the letterpress seems fairly accurate, if not scientifically precise; but the illustrations are on too small a scale, and altogether wanting in detail. The publication is at all events cheap enough.

THE City of Nancy has instituted at its own expense a competition among aëronauts. A premium of 80*l*. has been offered to the aëronaut who on an ascent made from Nancy shall have made the best observations. MM. Eugène Godard and Duruof have entered the lists.

IN the beginning of September a statue erected to Pascal by ublic subscription will be inaugurated at Clermont. The principal address will be delivered by M. Bardoux, ex-Minister of Public Instruction, and member for Clermont.

EVERY year the laureates of the Municipal Schools of Paris travel during their holidays at the expense of the Municipality. The pupils of the Turgot School will visit Chambéry, those of the Lavoisier School, Havre, and those of the Colbert School, Chambéry. The pupils of the J. B. Say School will go to Clermont-Ferrand and witness the inauguration of Pascal's statue.

M. MAURICE KOECHLIN of Mulhouse, although born deaf and dumb, has passed successfully his examinations for baccalaureat at Rouen. He was educated by M. Hugentobler, director of an institution for such unfortunate persons. This young man is only sixteen years old, and his wonderful success has created quite a sensation.

THE Sixth Annual Report of the Yorkshire College for 1879-80 speaks with satisfaction of the progress of that institution. Instruction is now given in fourteen distinct subjects by twelve professors, lecturers, and instructors, aided by nine assistants. The number of students had increased to 142 from 113 of the previous year; there were besides 52 medical and 148 occasional students.

THE additions to the Zoological Society's Gardens during the past week include two Lesser Black-backed Gulls (*Larus fuscus*), British, presented by Mr. Beazley; a Horned Lizard (*Phrynosoma cornutum*) from Texas, presented by Mr. Luiz de Tavaris Ozorio, a Red-handed Tamarin (*Midas rufimanus*) from Surinam, two Russ' Weaver Birds (*Quelea russi*) from West Africa, deposited; a Servaline Cat (*Felis servalina*), a Coquetoon Antelope (*Cephalophus rufilatus*) from West Africa, a White-cheeked Capuchin (*Cebus lunatus*) from Brazil, four Brown Capuchins (*Cebus fatuellus*) from Guiana, two Swainson's Lorikeets (*Trichoglossus novæ-hollandiæ*) from Australia, an Anaconda (*Eunectes murinus*) from Demarara, purchased; a Mesopotamian Fallow Deer (*Cervus mesopotamicus*), a Gaimard's Rat Kangaroo (*Hypsiprymnus gaimardi*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

COMETS OF SHORT PERIOD.—Faye's comet was detected by Mr. Common at Ealing, with his large reflector, on August 2, in the position given by Dr. Axel Möller's ephemeris. The theoretical intensity of light at this date was 0·078, which rather exceeds that at the first and last observations at the appearance in 1850–51. The comet was very small and extremely faint when the sky was not quite black. The perihelion passage does not take place until January 22, 1881, but although long visible, the faintness of the comet will prevent its being well observed at any time with ordinary telescopes. Since its last appearance in 1873, when only four observations were secured, the effect of perturbation has been to lengthen the period 56·5 days, and to retard the arrival at perihelion by 38 days, the main part of this perturbation having been produced by Jupiter in 1875.

Prof. Oppölzer has published an ephemeris of Winnecke's comet from elements brought up to the next perihelion passage (December 4). The track of the comet will be so unfavourable that it is very doubtful if observations can be obtained at this return. If the comet be glimpsed at all, it is most likely to be during the month following December 20, for which period, that nothing may be wanting on his part, Prof. Oppölzer has given an accurately-calculated ephemeris, which he thinks will indicate the position within two minutes of arc. The three returns in 1858, 1869, and 1875 were connected, taking into account the perturbations by Jupiter and Saturn, and Herr A. Palisa determined the effect of the same planets (first-power perturbations) from 1875 to December 1, 1880. The effect of a resisting medium was likewise included, Prof. Oppölzer having, as we lately recorded, found evidence of its sensible influence on the motion of this comet, unless a correction be applied to the received mass of Jupiter, which seems hardly admissible to the extent required.

Encke's comet will again arrive at perihelion about the first week in November, 1881, after which no one of the comets of short period will be due until January, 1884, but before that time it may be anticipated that the comet of 1812 will have